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(56) Documents Cited

GB 2248330 A GB 2218553 A EP 0323041 A2
EP 0053463 A1 US 4973944 A US 4777477 A

(58) Field of Search

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(54) Electronic tagging system

(57) One or more tags for physical association with animate bodies or inanimate objects can be tagged incorporating a battery operated radio transmitter arranged to send out radio frequency signals and an alarm unit incorporating an alarm, a receiver responsive to said signals and a threshold switch arranged to trigger said alarm when the amplitude of the received signals falls below a predetermined threshold. Thus should a tagged article go out of range or a tag cease to function the received signals would fall below the threshold and the alarm would be triggered.

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ELECTRONIC TAGGING SYSTEM

TECHNICAL FIELD OF THE INVENTION

This invention relates to a system for electronically tagging an article. In this specification the term "article" includes a human or animal body as well as inanimate objects.

The invention is in fact applicable to any potentially valuable articles which, by way of example only, include children, livestock (e.g. horses and deer), and articles of machinery, tools, and pieces of electronic equipment.

SUMMARY OF THE INVENTION

The present invention proposes an electronic tagging system which comprises:

- a tag for physical association with an article to be tagged and incorporating a battery-operated radio transmitter arranged to send out radio frequency signals; and
- an alarm unit incorporating an alarm, a receiver responsive to said signals, and a threshold switch arranged to trigger said alarm when the amplitude of the received signals falls below a predetermined threshold.

Thus, should the tagged article go out of range, or the tag cease to function, the received signals will fall below the threshold and the alarm will be triggered.

The tag preferably further incorporates attachment means in the form of a physical loop which is arranged to inhibit the transmitter should the loop be broken.

In one form of the invention, the loop may comprise a metal hasp or the like which is arranged to operate switch means when the hasp is uncoupled. The hasp can thus be used to attach the tag to the article, and in the event that the tag is removed the alarm will be triggered. The hasp could similarly be used to attach the tag to a door or gate for example, through which access can be gained to the tagged article.

In another form of the invention, the loop may comprise a metal conductor which deactivates the transmitter when broken. The conductor may be provided by the metal hasp mentioned above, or it could run along the length of a frangible loop.

In a third embodiment of the invention the loop may comprise a strap of plastics or other suitable material, which incorporates a pair of closely adjacent conductors arranged to deactivate the transmitter if the two are shorted together. Thus, in the event of the loop being cut by a knife or the like the transmitter will again cease to function and the alarm will be activated.

The alarm may comprise an audible and/or visual warning. The alarm is preferably arranged to be de-activated again should the signal exceed the said threshold. Thus, in the event of a temporary alarm condition caused by the tagged item going out of range for a short period, the alarm will only operate for a corresponding period, and the removal of the alarm condition will be immediately signalled to the user.

The alarm unit preferably includes means of adjusting the level of the said threshold so that the distance at which the tag goes out of range of the receiver and triggers an alarm condition can be varied.

The system has various uses, which include the following:

EXAMPLE 1

The tag can be attached to a child's clothing or worn on a bracelet or necklace and the child's parent or guardian carries the alarm unit. As long as the child remains within range of the parent or guardian no alarm will be raised, but as soon as the child goes out of range the alarm will operate. Clearly the system is useful in many situations where a child may stray from the parent or guardian, such as shopping arcades, beaches, near reservoirs, in play areas, or even in domestic gardens.

EXAMPLE 2

The tag can be built into or retro-fitted to a valuable item of equipment such as a television set, video recorder or cd player. When the owner goes on holiday or is away from the house for some other reason the alarm unit can

be given to a near neighbour. As long as the tagged equipment remains within range of the alarm unit no alarm will be sounded, but should a break in occur and the equipment removed an alarm condition will immediately occur.

EXAMPLE 3

The tag can be secured to a bicycle whilst it is left outside a shop or other premises, and the owner keeps the alarm unit with him inside the building. Should the bicycle be removed the owner will immediately be warned.

EXAMPLE 4

The tag can be secured to a horse or placed on a stable door or the gate to a field containing the animal. If the horse is removed from the field the alarm will operate, and similarly, if the tag is removed from the door or gate so that the hasp or loop is broken or the conductors shorted, the alarm will again operate.

Clearly numerous other examples can be envisaged.

* * * * *

CLAIMS

1. One or more battery operated radio transmitters arranged to send out radio frequency signals and
- an alarm unit incorporating an alarm, a receiver responsive to said signals, and a threshold switch arranged to trigger said alarm when the amplitude of the received signal falls below a predetermined threshold
2. The radio transmitter as claimed in Claim 1 incorporates attachment means in the form of a physical loop which is arranged to inhibit the transmitter should the loop be broken
3. The loop as claimed in Claim 2 comprises one or more metal hasps or the like which are arranged to operate switch means when the hasps are uncoupled
4. The loop as claimed in Claim 2 or Claim 3 comprises a strap incorporating a pair of closely adjacent conductors

Relevant Technical Fields

- (i) UK Cl (Ed.M) G4N (NPL)
 (ii) Int Cl (Ed.5) G08B 13/14, 21/00

Databases (see below)

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Search Examiner
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 18 JULY 1994

Documents considered relevant
 following a search in respect of
 Claims :-
 1-4

Categories of documents

- X: Document indicating lack of novelty or of inventive step. P: Document published on or after the declared priority date but before the filing date of the present application.
- Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A: Document indicating technological background and/or state of the art. &: Member of the same patent family, corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2248330 A (SEEMAN)	1
X	GB 2218553 A (DICK)	1
X	EP 0323041 A2 (WOLK)	1, 2
X	EP 0093463 A1 (GIVATY)	1
X	US 4973944 (MALETTA)	1-4
X	US 4777477 (WATSON)	1-4

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).